Contraceptive Efficacy of *Butea Monosperma* seed Extract in Wistar Rat

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Summary

This study is part of an integrated systematic approach and develops orally effective contraceptive agents from natural sources. The effect of daily oral feeding of oil extract from the seeds of Butea monosperma at a dose of 0.250 ml /kg body weight for 45 days were investigated with respect to epididymal and testicular histophysiology ,metabolism and the fertility potential of rats, following withdrawal study. The testicular and cauda epididymal parameters revealed altered physiology and metabolism resulting in a reduction in fertility of extract -fed rats. Moreover the induced effects seemed to be transient and were reversible upon withdrawal, showing its antifertility action. Overall results indicate that the oil extract of Butea monosperma possesses spermicidal activity. The plant is indigenous in India and is found in Ahmednagar, Pune & Nashik district.

Key words: Contraceptives, Butea monosperma,Test animals,Spermicidal.

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Introduction

One of the most challenging pursuits is the realm of pharmaceuticals and medical sciences are the search for newer & more potent drugs with little toxic effects, self administrable, less expensive and completely reversible. Much of these properties are observed in the drugs of plant origin.

The use of the medicinal herbs for curing diseases has been documented in history of all civilizations. With the onset of research, it was concluded that plants contain active principals, which are responsible for active action of the herbs. It is believed that natural products utilized in the correct form & dosages are less harmful than synthetic products, which most often elicit some an amphylactic response on reaction. (olatunji 2005) One of the such plant is Butea monosperma.

The rat population increases rapidly. One female rat can give average 10-12 pups at a time. After every four months it will be 12^2, 12^3 ,12^4 ,…….12^n .

The main rat menace is the spoilage of food grains and crops. They are also the carrier of diseases. Herbal treatment which is a food supplement, when consumed by rat it shows no mortality, no toxicity & reduction in fertility. In human being population is controlled by means of various family planning methods or by means of contraceptives.

But it is not possible in case of rats. In our method rats are fed by Butea monosperma for specific period till sperm count decreases below productivity level.

Methods

Plant material-Butea monosperma plant is selected for study, Botanical name-Butea monosperma Linn, Parts used- Seeds.

This plant is collected from forest and authenticated by experts from our college. The plant is planted in the garden for further study. The seeds are collected, dried and powdered. The sieved powder is stored in commercially available airtight plastic container. Than we make an oil extract from this seed powder.

Animals- Healthy adult male wistar rats of Swiss strain with proven fertility weighing between 330-348g were used for various experiments. The animals are stored in polyurethane cages that are cleaned daily and provided with rice husk bedding. The animals are provided with plain tap water for drinking purpose. The animals are fed on commercially available mice feed supplied by Amrut feed. The specifications of the feed are: Crude protein: - 20-21% minimum,Ether extractive: - 04-05% minimum,Crude fiber: - 04% maximum, Ash: - 03% maximum, calcium 1.2% phosphorus 0.6% minimum**,**Pellet size: - 12mm.The feed is enriched with stabilized such as Vitamin A, D_3 and $B_{12,}$ thiamine, riboflavin, niacin, folic acid and minerals.The animals were fed orally for 45 days.

Group 1 - 6rats fed with water only (control).

Group 2- 6 rats fed with oil extract of seeds of Butea monposperma.

Table 1- **Body and organ weights, Epididymal sperm profile and fertility of control and experimental group of rats**

Parameter	control	Butea monosperma Oil extract fed	Recovery (45days)
Body weight (gm)	331	348	350
Testis(mg)	129.3	121	128
Cauda epididymis(mg)	26	24	26
Sperm mobility (%)	72	24	68
Sperm count(million/ml)	128	57	126
Live sperm(%)	74	28	70
Dead sperm(%)	24	71	28
Feretility rate (%)	95-100+ve	25+ve	90+ve

Table 2- **Epididymal and testicular biochemical parameters and haematological parameters of control and experimental rats.**

Parameter	control	Oil extract fed	Recovery (45days)
Protein (mg/100mg)	8.5	7.0	8.2
Haemoglobin(g%)	13.2	12.2	13.0
RBC (10^6/mm^3)	8.45	7.70	8.40
WBC(10^6/mm^3)	6.7	5.9	6.3
Serum testosterone	0.41	0.01	0.36

Results & discussion

Oral fereding of the oil extract of the seeds of Butea monosperma for 45 days had no significant effects in whole body and organ weights indicating no effect on general metabolism and growth of exposed rats. The spermiogram of the extract fed rats had a significant variation in epididymal sperm count, sperm motility and sperm viability. The decline in the sperm count indicated the probable antispermatogenic nature of this extract. Numerous plants and their products have also been shown to possess antispermatogenic activities (Rao, 1988; Arjmand et al., 1994).

The loss of sperm motility is also related to inhibition of sperm enzymes essential for flagellar movement and their metabolism**. F**urther it is correlated with alterations in sperm viability and morphology.The epididymal maturation process is essential for sperm function (Nieschlag and Habenicht, 1992).But the observed effects were found to be recovered gradually after withdrawal of the feeding. In conclusion it is obvious that this extract possesses a reversible contraceptive action without significant side effects in rats.

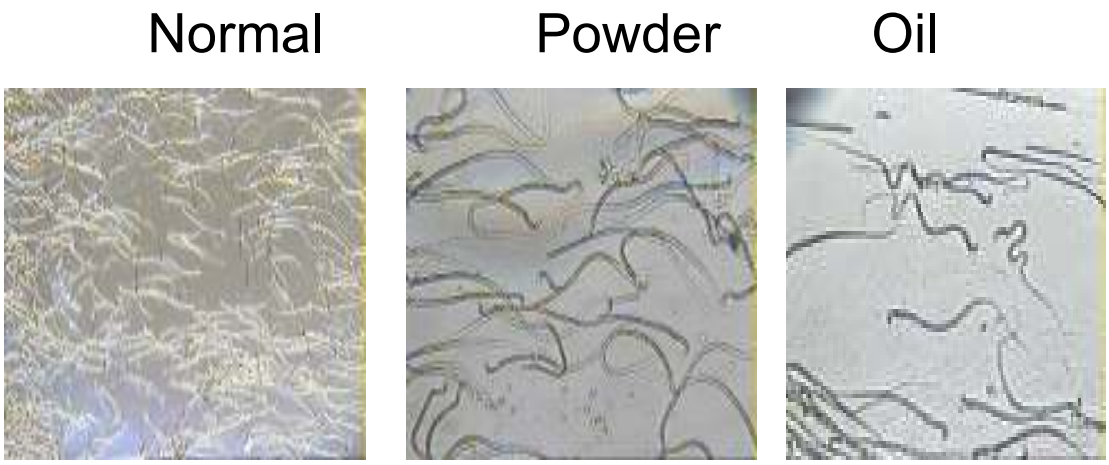
Cage side observations-Assessment of the behavior of animals is carried out daily before the dose is administered and continued through out study. Formal clinical observations such as condition of fur, damaged areas of skin, subcutaneous swellings or lumps, areas of tenderness, abdominal distension, eyes for dullness, dryness, discharges, opacities, pupil diameter, ptosis, the color and consistency of the faces, Breathing abnormalities, gait; etc. are recorded daily. Any changes or abnormalities recorded could be an indication of toxic response.

Body weight changes- The change in the body weight is an important factor to monitor the health of the animal. Loss of body weight is the first indicator of the onset of an adverse effect of treatment. The dose, at which body weight loss is 10% or more, considered to be a toxic dose, irrespective of whether or not it is accompanied by any other changes.All the animals showed minor changes in body weight indicating no toxic effect of plant powder administered

Food and water consumption-Like body weight, food consumption can indicate an adverse effect of a drug at an early stage. Measurement of water consumption is carried out in studies with diuretics, or compounds expected to affect the kidneys, if earlier studies indicated excessive or reduced drinking. There is an increase in food intake of all the animals.There is a minor decrease in water intake of the animals after treatment.

Butea monosperma seeds in the form of oil extract can be safely administered to rats up to an oral dose of 0.250/ kg body weight for antifertility studies.The observations recorded for behavioral changes, body weight changes, food and water intake and mortality, indicate that ***Butea monosperma*** is non toxic and safe.

CONTRACEPTIVE EFFICACY OF BUTEA MONOSPERMA



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